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ABSTRACT

This document describes a course for self-discovery of learning style preferences offered to students and faculty of Central Piedmont Community College (North Carolina). The course was based on the theory of Educational Sciences and cognitive style mapping developed by Joseph E. Hill. PLS 9000, Preferred Learning Styles, was a nine contact-hour course of four week duration. During the second session, a 219-item test of cognitive style eliciting learning style preferences was given. Other sessions were devoted to discussing and analyzing the conceptual framework of preferred learning style and cognitive mapping. Each participant analyzed his own maps of major and minor orientations to symbols and their meanings, cultural determinants, and modalities of inference--the three elements of cognitive style. Because student learning styles varied widely and participants reacted favorably, the author recommends that more attention be given to individualized learning styles in future curriculum design and that more courses offering individuals opportunities for self-discovery be explored. The class plan and schedule for PLS 9000, sample test questions, sample cognitive maps, the course evaluation questionnaire, and copies of all curriculum materials used in the course are appended. (DC)

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# PREFERRED LEARNING STYLES: A DESIGN FOR FUTURE CURRICULA

by

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Central Piedmont Community College

A Practicum presented to Nova University in partial fulfillment for the Degree of Doctor of Education

Nova University

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## Introduction

Curriculum development in the community college has for the most part evolved from the traditional college and university concept of curriculum. The basic assumption that seems to have prevailed is that the community college would deal mostly with traditional kinds of students. This evolution and this seeming fundamental assumption has caused most curricula and most courses within those curricula to be organized around credit hours, semester systems, quarter systems, great amounts of theory, not too much concern for the individual and his specific needs in the real world in which he dwells. "The community junior college through its open door policy promises educational opportunity for all people."[1] Not until the late sixties and early seventies was much attention given to the non-traditional college student, the modern student with his individual needs, and with very definite time constraints that normally defy quarters and semesters and even normal meeting times.[2]

Only in recent times have some community colleges added new kinds of courses to the total college curriculum. Many of these courses have been individualized and self-paced and changed considerably when compared to traditional kinds of courses.

It is the purpose of this practicum to investigate the idea of a new and a different kind of course within a community college. It is also

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[1]Roueche, John E. and Kirk Catching Up: Remedial Education Jossey-Bass Publishers, San Francisco, 1973 page 1.

[2]Ibid.

the intent of this practicum to sample the reaction to a course designed to involve each participating individual in discovering his own learning stye.

Background and Significance

Educational Sciences is a conceptual framework for educators. The conception makes the following assumptions:

1. EDUCATION IS THE PROCESS OF SEARCHING FOR MEANING
2. THOUGHT IS DIFFERENT FROM LANGUAGE
3. MAN IS A SOCIAL CREATURE WITH A UNIQUE CAPACITY FOR DERIVING MEANING FROM HIS ENVIRONMENT AND PERSONAL EXPERIENCES THROUGH THE CREATION AND USE OF SYMBOLS.
4. NOT CONTENT WITH BIOLOGICAL SATISFACTIONS ALONE, MAN CONTINUALLY SEEKS MEANING.[3]

The Educational Sciences is currently comprised of seven sciences:

1. SYMBOLS AND THEIR MEANINGS
2. CULTURAL DETERMINANTS
3. MODALITIES OF INFERENCE
4. MEMORY
5. COGNITIVE STYLE
6. TEACHING, COUNSELING, ADMINISTRATIVE STYLE
7. SYSTEMIC ANALYSIS DECISION MAKING[4]

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[3]J. E. Hill, The Educational Sciences (Bloomfield Hills, Michigan: Oakland Community College Press, 1972), p. 5

[4]Ibid.

This practicum investigation is an experience with the first five sciences with the exclusion of memory which at present is an empty set. The first five sciences make up the cognitive style of an individual. Cognitive style is defined as the cartesian produce of the sets: symbols and their meanings, cultural determinants, and modalities of inference. The cognitive style of an individual may be further defined as "how an individual comes to know."[5] This conceptual framework of the Educational Sciences was conceived by Joseph E. Hill who is currently president of Oakland Community College in Michigan. Many of the ideas that go into the framework of Educational Sciences are based on ideas and concepts of many other professional such as Champlin, Villemain (symbols and their meaning), Earl Kelly and Parsons (cultural determinants). Piaget and Bruner (modalities of inference) and Allport (Cognitive Style).[6]

Even though Educational Sciences is still in the developmental stages, Dr. Hill and his staff at Oakland continue to develop the system and work with other educators throughout the country who also are helping to develop the system. There are also rumerous schools throughout the country that are experimenting with the concept of Educational Sciences and its contributions to improving the teaching process. Schools that are using the concepts range from kindergarten in East Lansing, Michigan, to colleges such as Central Piedmont Community College in North Carolina. In addition to many schools in this country, there

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[5]J. E. Hill, "Speech to Learning Resources Association of N.C." May, 1974.

[6]J. J. Berry and T. J. Sutton, Educational Sciences a Bibliography with Commentary, 1973. P. 6-7.

are also many schools in Canada that are experimenting with Educational Sciences.

Since this practicum is actually about an experience with cognitive styles of individuals, those participating in the experience, it was necessary to prepare materials that would help each individual understand the concept of Educational Sciences and particularly cognitive styles. Since these materials are part of the practicum and since they represent an up-to-date review of the terms necessary to use and understand symbols and their meanings; cultural determinants, and modalities of inference, they will be included in the appendix in their entirety. (See Appendix I, II, III.)

It is significant to note at this point that Central Piedmont Community College is operating on a quarter system, and this course, PLS 9000, was a nine contact hour course that began on the eighth week of the quarter and ended on the eleventh week.

Procedures.

PLS 9000, Preferred Learning Style, was conceived and planned around the concept of Educational Sciences as developed by Joseph E. Hill and his staff of Oakland Community College in Michigan. The idea was to involve people, students and faculty alike in a learning environment where they could learn some things about the ways in which they prefer to learn, some ways in which they learned best, and some procedures whereby anyone can begin to individualize his own learning.

Appendix IV for class plan.)

The second session was fully devoted to the testing procedure for determining one's preferred learning style. Each participant was asked to respond to a series of statements (219 different statements). These statements represent a test for Cognitive Style developed by Joseph Hill and his staff at Oakland Community College. In this experiment preferred learning style will be used to mean Cognitive Style. (See Appendix V for samples of the statements on the test.) The participants' response to each item could be (a) Usually or (b) Sometimes or (c) Rarely. Participants marked their responses on IBM data cards which were collected and mailed to Oakland Community College in Michigan for analysis.

Class hours three, four, and five were devoted to discussing and analyzing the conceptual framework of preferred learning style or cognitive mapping. The basis for discussion were actual "maps" of individuals (see appendix VI for samples) and the learning packages prepared for the participants. A considerable amount of this time was spent learning new vocabulary, for most of the participants were not familiar with many of the terms used in the concept.

Class hours six, seven, eight, and nine were spent looking at individual maps that resulted from the analysis of the participants responses to the test statements. Each participants' response were analyzed by Oakland's computer, and each participant received his own read-out showing his own major and minor orientations to Symbols

and Their Meanings, Cultural Determinants and Modalities of Inference.

At the last meeting participants were also asked to respond to a six item questionaire relating to the individual's response to the course. (See Appendix VII).

Results

In the writer's opinion the results of this practicum suggest many things. One of the most dramatic is the number of individual characteristics and traits that a class of 33 students demonstrate. To help to simplify the recording of the results two approaches will be used. First a summary of the individual participants' preferred learning styles will be presented showing the similarities and differences of the participants. Secondly, the participants' reactions to the course will be catalogued and summarized. It is hoped that this dual approach to recording the results will doubly demonstrate the values of the investigation.

The first set of a person's Cognitive Style, Symbols and Their Meanings, shows both major and minor orientations to theoretical and qualitative symbols. With consideration to major orientation, only this group demonstrated six different theoretical orientations. Thirteen of the group showed one major - Theoretical Visual Linguistic. Eight of the group were major TVL and TVQ. Surprisingly six of the group showed no major theoretical orientation. Three of the group were major TAQ, TVL and TVQ. Two were major TAL, TVL and TVQ. No one was a major in all four theoretical symbols. See Table I, page 9.

Group of Students Taking PLS 9000 (Preferred Learning Style) and Their Major* Theoretical Orientations.

| Major Theoretical Orientation | Number of Students |
|---|---|
| TVL | 13 |
| TVL TVQ | 8 |
| No major theoretical symbol | 6 |
| TAQ TVL TVQ | 3 |
| TAL TVL TVQ | 2 |
| TAQ TVL | 1 |
| | 33 - Total |

*This table represents major orientations only. No attention was given to minor orientations in this table.

TVL - Theoretical Visual Linguistic

TVQ - Theoretical Visual Quantitative

TAQ - Theoretical Auditory Quantitative

TAL - Theoretical Auditory Linguistic

Qualitatively this group of students demonstrated an even greater diversity than they did theoretically. In response to this test for preferred learning style which tests for fifteen qualitative orientations, one participant demonstrated a major orientation to only one qualitative symbol, and one was a major to all fifteen. Seven participants had majors to thirteen symbols and five had majors to fourteen of the symbols. The others were spread between five, six, seven, eight, nine, ten, eleven, and twelve qualitative orientations. (See Table 2 and 3, pages 11 and 12)

Table 2

The number of major qualitative orientations demonstrated by PLS 9000 students. (Fifteen major orientations is the maximum)

| Number of Major Orientations | Number of Students |
|---|---|
| 1 | 1 |
| 5 | 2 |
| 6 | 4 |
| 7 | 1 |
| 8 | 3 |
| 9 | 2 |
| 10 | 4 |
| 11 | 4 |
| 12 | 1 |
| 13 | 7 |
| 14 | 5 |
| 15 | 1 |

Table 3

This table shows the qualitative symbols tested for and the number of students showing a major to each of the symbols.

| Qualitative Symbols | Number of Participants who Showed a Major Orientation To This Symbol. |
|---|---|
| Q(CEM) Empathetic | 25 |
| Q(CK) Kinesics | 23 |
| Q(CES) Esthetics | 29 |
| Q(CS) Synnoetics | 24 |
| Q(CET) Ethical | 24 |
| Q(CKH) Kinesthetic | 16 |
| Q(CT) Transactional | 21 |
| Q(CP) Proxemics | 20 |
| Q(CH) Histronic | 10 |
| Q(V) Visual | 21 |
| Q(T) Tactile | 27 |
| Q(S) Savory | 27 |
| Q(P) Proprioceptive | 12 |
| Q(O) Olfactory | 20 |
| Q(A) Auditory | 27 |

In the second set, Cultural Determinants, this group demonstrated ten different patterns. Cultural determinants takes into account one's individuality, one's associate influence and one's family influence. See Appendix II for further description and definitions. Table four shows the different cultural determinant patterns of the group.

Table 4

10 Different Types of Cultural Determinants

| | | |
|---|---|---|
| I A<br>F'F' | ---- | 3 |
| I<br>A'<br>F' | ---- | 2 |
| A I<br>F'F' | ---- | 1 |
| F<br>I'<br>A | ---- | 1 |
| I<br>F'<br>A' | ---- | 10 |
| I F<br>A'A' | ---- | 6 |
| F A<br>I'I' | ----- | 5 |
| F I<br>A'A' | ---- | 3 |
| F<br>A'<br>I' | ---- | 1 |
| I<br>A' | ---- | $\frac{1}{33}$ |

I - Individual
A - Associate
F - Family

In the third set, Modalities of Inference (See Appendix III), the participants demonstrated nineteen different inference patterns. No more than five students had similar patterns and twelve students showed patterns that were like no other in the group. Each of the twelve was completely individual in his manner of reasoning. Table five shows the modality of inference patterns of the group.

Based on the participants' cognitive styles the group seems to illustrate the need for different forms of teaching and learning.

Table 5

19 Modalities of Inference

R L
M'
D' ---- 1

R L
D' ---- 1

R
M'
D' ---- 1

R
M' (K)
D' ---- 1

D
M'
R' ---- 1

R M L

D'D'---- 5

D R L

M'M' --- 3

R M L

D'D' (K) -- 3

R D L --- 1

R D L
M'M' ---- 4

M L
D' (K)
R' ---- 1

L ---- 2

R D

M'M' ---- 1

M
R'
D' ---- 2

R D L

M'M' (D)-- 2

R L
D'
M' ---- 1

M L
R'
D' ---- 1

M R L

D'D' (K) -- 1

R L
D'
M' ---- 1

33

R - Relationship
M - Magnitude
L - Appraisal
D - Difference
(K) - Deductive Reasoning

The participants' reactions to the course are based primarily on their response to a questionaire given at the end of the course. Following are summary reactions to the questions.

The question "What impact has Preferred Learning had on you" drew a mixture of responses most of which were positive. The major ideas expressed in the responses to this question are represented by the following statements:

> I now know that there are symbols and their meanings, cultural determinants and modalities of inference. These revelations will be helpful when I am with another person.
>
> I had to stop to realize there was such a thing. The map gave me a good feeling about myself.
>
> It has made me question and examine my learning style.
>
> Anything which makes me know myself better is good for me.
>
> It has opened my eyes to who I am more than anything else.
>
> It has made me stand back and look at myself more objectively. I was surprised: weak where I thought I was strong and strong where I thought weak.
>
> It confirmed the worth of my own feelings about the effectiveness of multi-media approach to both student and teacher. Has clarified the picture of my own strengths and weaknesses.
>
> A great one - it has made me much more aware of learning blocks that many of my students exhibit. My approach is

beyond their dimensions at this point in their course.

A significant impact. It meshes beautifully with what I have been learning in transactional analysis.

It has given me cause to reflect and look much more closely at the way I search for meaning.

I have understood more each session.

It has made me aware of the many factors which influence learning.

I was surprised at the results of my map.

The scope of the ideas gained is so great that I am learning the course not knowing how I will use them.

It made me think about myself and how I learn.

With the map I can see what things to work on.

I found it interesting, but how accurate is it?

Little

Reinforcement

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To the question, "Would you recommend that a similar version of this course be offered again for faculty and students?" all but one participant said, "yes definitely." The one negative explained that the content should be offered again but in a different manner.

To the question "Do you think CPCC ought to offer more short non-academic courses,?" all of the participants said, "yes." And several expressed that they would support such a course as in-service training.

The participants' response to "Assuming that each of us do have a preferred learning style . . . what things do you like to have present in your learning environments?" named the following: variety, books, audio-visuals, discussions, people, frequent opportunities for interaction with the learning systems, music sometimes - depending on what I have to do, pleasant environment, quiet, temperature slightly cool, beauty, immediate feedback, lots of stroking, challenges, things written so I can follow what's going on, plenty of space, plenty of helpful material close at hand, exceptionally highly qualified faculty, things to work with, wide open possibilities, relevancy, visual presentation, informal creative atmosphere, other people and sensory stimulation, a chance to learn while not sitting at a desk, tests that can be taken orally or written, adequate time, small group work, a teacher who doesn't jabber too much, films, books, style, words, visual and tactile contact, I like to be shown the differences.

It is interesting to note the astounding variety of things that a class expects in a classroom. It is also extremely interesting that only two

references of any sort were made regarding an instructor.

In response to "Do you think that a course about learning and how we learn would have a high appeal to all people?" the responses were split about50% yes and about 50% no. Most of the negatives explained that "nothing appeals to all people." Some negative responses also explained that many instructor types would be threatened by a concept such as cognitive mapping. Also there was the sentiment voiced by one who felt that cognitive mapping was "just another educational hoax."

So it appears that many people would have a strong interest in learning about learning and at the same time many would tend to be skeptical and would want to "wait and see."

"Do you feel that the concept of Educational Sciences will influence the design of future curricula?" received 100% positive responses. The following are representative replies to "How?"

> By resulting in the offering of more channels to learn.
>
> We will be able to reach everyone in a more meaningful way as we discover the ways people learn. Future curricula should take into account preferred learning styles and offer the same course in different ways.
>
> By adding ways to present information to the traditional way.
>
> Educational Science tells us that we have different learning styles, and we don't always have to be wrong.

I see the concept as time consuming and expensive but encouraging.

It should be the basis for individualized instructions.

I hope it does - too many things are overlooked in a person.

By pointing individualized instruction toward real individualized learning.

It will help to individualize the learning environment.

Ultimately there will be many options available to people in education.

More people will be offered their own learning sytle rather than the age old lecture method.

In the future we might think of gearing our learning tasks to learning styles.

Teachers will learn to offer many paths to one goal.

Although many of the participants simply said that the concept of Educational Sciences would influence the design of future curricula, they did not explain how. Many of the ones who explained how related the concept to the process of individualizing learning and offering more options to learn. Also there was a strong expression that the concept would greatly influence learning environments in a positive way.

Recommendations

It is hoped that the methods used in this practicum and the results of their use will influence the design of future curricula on a large scale. It is already observable that some effects of Preferred Learning Styles are having an impact on some instructors in the Advancement Studies Department of Central Piedmont Community College. The writer recognizes, however, that a concept such as testing each learner for his preferred learning style is both difficult and complex and efforts to improve curriculum design with this concept will have to be cautious.

It is with these hopes and reservations that the writer makes the following recommendations - based on an experience with Preferred Learning Style:

1. A similar course ought to be offered on a consistent basis. The course could be offered once each quarter or several times within the quarter. It was obvious through the experience that a course that defies the quarter bounds and that is both non-academic and non-credit will draw a high response. (Plans are presently being made to offer a similar version of the course this quarter.)

2. A community college such as Central Piedmont ought to offer "short" courses on a frequent basis. Such courses ought to be for both students and staff. Courses such

as these would be scheduled to begin and end at times that are compatible with interested participants. The design of very many such courses would surely influence not only the registration system but the whole process of scheduling.

3. More courses that allow the individual to discover things about himself in a free sort of way without the threat of grade or "covering the material" ought to be further investigated.

   There seemed to be a totally positive reaction by the participants to discovering how they learn best. Many of the participants almost seemed to be saying "why didn't someone show me these things years before. And why aren't these variations in learning style taken into account by most instructors?"

4. A department such as Advancement Studies ought to consistently investigate applications of concepts such as the concept of Educational Sciences.

   It seems as a result of working with this group of students that many people both students and staff are willing and are actually seeking better and different ways to seek meaning.

5. Curriculum design of the future will almost surely have to take into account more individual patterns of learning. For the participants in this group are completely divergent.

Even though there are some similar elements in some of the participants' styles, no two could be said to prefer to learn in the same manner.

6. More attention should be given to the designs of the environment that goes with the curriculum. The participants of this group were far more aware of the sights and sounds around them - their environment - than they were of the individual called the instructor. Curriculum designers of the future will have to take into account many of these preferences otherwise the curriculum will not be relevant to the individual.

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# APPENDIX I

## SYMBOLS AND THEIR MEANING

## SYMBOLS AND THEIR MEANINGS

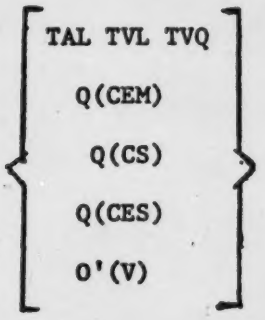
Man searches for meaning, and in his search he gets most of his meaning from symbols. Each individual establishes his own symbolic orientation, and it is this fact that makes learning an individualized process.

This unit is about symbols and their meanings, or which symbols are most meaningful to you.

The author of this unit apologizes to those of you who are not a major theoretical visual linguistic, for this unit will perhaps not be as meaningful to those of you who are theoretical auditory linguistic.

T. E. Griffin

SYMBOLS AND THEIR MEANINGS




IN THIS CONCEPT EDUCATION AND LEARNING ARE DEFINED AS "A SEARCH FOR MEANING."

MEANING IS DERIVED FROM SYMBOLS.

EACH INDIVIDUAL HAS A DIFFERENT SYMBOLIC ORIENTATION IN HIS SEARCH.

THERE ARE TWO KINDS OF SYMBOLS: THEORETICAL AND QUALITATIVE.

WHICH SYMBOLS DO YOU USE MOST FREQUENTLY?

WHICH SYMBOLS HAVE THE MOST MEANING FOR <u>YOU</u>.

The objective of this module will be for you as an individual to gain to your satisfaction an understanding of symbols and their meanings as related to the concept of Educational Sciences. [1]

## THEORETICAL SYMBOLS

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Words:
(Linguistic)

college, man, woman

book, child, church

Numbers:
(Quantitative)

1, 7

4 + 5 + 10

x + 7

a + b + c

Theoretical symbols are symbols which represent or mean something other than the symbol itself.

Examples:

What book do you think of when you see or hear the word book?

What College do you recall when you see (visual) or hear (auditory) the word college?

What woman do you remember when you see or hear the word woman?

continued -

What is 1 to you? The first of June, El Numero Uno, 1 set.

What does 1 mean to you when you hear or see it?

4 + 5 + 10 is a combination of things? people? ideas? . . . . .

> Theoretical symbols represent to the individual something other than the symbol itself. The individual through his experience assigns the meaning. 2

THEORETICAL SYMBOLS ARE AUDITORY IF YOU HEAR THEM.

THEORETICAL SYMBOLS ARE VISUAL IF YOU SEE THEM.

In the Educational Sciences concept:

the symbol TVL = Theoretical Visual Linguistic
the symbol TVQ = Theoretical Visual Quantitative
the symbol TAQ = Theoretical Auditory Quantitative
the symbol TAL = Theoretical Auditory Linguistic

-- THE TVL PERSON LIKES TO READ: HE GETS MEANING FROM READING.

-- THE TAL PERSON LIKES TO LISTEN: HE GETS MEANING FROM LISTENING.

-- THE TVQ PERSON GETS MEANING FROM SEEING NUMERICAL RELATIONSHIPS.

-- THE TAQ PERSON GETS MEANING FROM HEARING NUMERICAL RELATIONSHIPS.

## QUALITATIVE SYMBOLS

Qualitative symbols are symbols that present to the mind of the individual whatever the object <u>is</u> to <u>that</u> individual.

Example: If we see a man, we are seeing what that symbol is, and we think <u>man</u>.

REMEMBER - THEORETICAL SYMBOLS MEAN SOMETHING OTHER THAN THE SYMBOL ITSELF.

Our Qualitative symbolic interpretations supply information to our Theoretical symbolic capabilities. This process continues all through life.

Qualitative symbols originate from three sources:

- our 5 major senses (sensory stimuli)
- effects of our culture (cultural codes)
- automatic impressions that trigger a series of operations (Programmatic effects)

## SENSORY QUALITATIVE SYMBOLS

QUALITATIVE:

Auditory Q(A) - hearing - meaning through hearing.

Olfactory (QO) - smell - meaning through smelling.

Savory (QS) - taste - meaning through taste

Tactile (QT) - touch - meaning through touch

Visual (QV) - seeing - meaning through sight.

Some individuals have a more highly refined auditory sense than visual sense. Others have a more highly refined tactile sense than savory sense, etc. Probably no two individuls are identical in their sensory stimuli.

WHICH SENSES DO YOU USE MOST FREQUENTLY?

WHICH GIVE YOU THE MOST MEANING?

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QUALITATIVE SYMBOLS INVOLVING CULTURAL CODES

There are ten qualitative symbols that relate to our culture and give us our abilities to pick up feelings and attitudes about others, about things, and about ourselves.

Qualitative Code:

Empathetic (EM) - sensitivity to feelings of others.

Esthetic (ES) - ability to see the beauty of an object or idea

Ethic (ET) - Commitment to a set of values, principles, obligations, or duties.

Histrionic (CH) - ability to exhibit a deliberate behavior, how to play a role.

Kinesics (CK) - ability to understand and to communicate with body language.

Kinesthetic (KH) - ability to demonstrate high degrees of muscular coordination

Proxemics (CP) - ability to judge social distance

Synnoetics (CS)- personal knowledge of oneself, self concept

Transactional (CT) - ability to sell one's idea to another - salesmanship ability.

Temporal (TM)- ability to perform or respond according to imposed time expectations.

-- ARE YOU MORE EMPATHETIC THAN ETHICAL?

-- ARE YOU MORE HISTRIANIC THAN ESTHETIC?

-- WHICH ARE YOUR PREDOMINANT QUALITATIVE CULTURAL CODES?

Theoretical symbols are linguistic (words) or quantitative (numbers). They may be either auditory or visual. Our theoretical capabilities continue to develop for a lifetime - maybe beyond.

Qualitative symbols are related to our senses, related to our culture, or are programmatic. Our qualitative symbolic capabilities keep supplying data to develop our theoretical symbolic capabilities.

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## PROGRAMMATIC QUALITATIVE SYMBOLS

Remember these are the symbols that cause automatic responses; one thing seems to trigger a set or series of actions which results in a complex performance.[3]

QUALITATIVE PROPRIOCEPTIVE Q(P)

is the ability to "put together" a number of symbolic interpretations into a performance of a complex task.

Example -

typewriting,

playing a musical instrument.

Qualitative Proprioceptive:

Dextral (PD) - predominance of right handedness, right footedness, etc., while "putting together" a series of symbolic interpretations into a performance of a complex task.

Sinstral (PS) - predominance of left handedness, left footedness, etc., while putting together a series of symbolic interpretations into a performance of a complex task.

Kinematics (PK) - ability to "put together" a series of symbolic interpretations into a complex performance of physical activity, involving motion.

Temporal (PTM) - the ability to "put together" a number of symbolic interpretations into a performance of physical activity involving good timing.

Just to make sure you have the idea, copy from the following list the symbols that indicate your idea of your dominant symbolic orientations.

Theoretical Visual Linguistic - TVL
Theoretical Auditory Linguistic - TAL
Theoretical Visual Quantitative - TVQ
Theoretical Auditory Quantitative - TAQ

Qualitative Auditory - Q(A)
Qualitative Olfactory - Q(O)
Qualitative Savory - Q(S)
Qualitative Tactile - Q(T)
Qualitative Visual - Q(V)

Qualitative Code Empathetic - Q (CEM)
Esthetic - Q(CES)
Ethic - Q(CET)
Histrionic - Q(CH)
Kinesthetic - Q(CK)
Proxemics - Q(CP)
Synnoetics - Q(CS)
Transactional - Q(CT)
Temporal - Q(CTM)

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1. Hill, Joseph E. The Educational Sciences. Oakland Community College Press, 1972.

2. Radike, Floyd W. editor. Handbook for Teacher Improvement Utilizing The Educational Sciences. American Educational Sciences Association, 1973.

3. Berry, J. J. and Sutton, T. J. The Educational Sciences, A Bibliography with Commentary. American Educational Sciences Association.

# APPENDIX II

## CULTURAL DETERMINANTS

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## CULTURAL DETERMINANTS

In an individual's search for meaning, the culture that he is a part of has an impact on his interpretation of symbols.[1] In this unit we will consider the cultural influences Family, Associates, and the Individuality of each person.

Those of you who are major TVL's and major I's will perhaps profit more from this unit. The author apologizes for this limitation.

T. E. Griffin

[1] Floyd W. Radike. Handbook for Teacher Improvement Utilizing The Educational Sciences. American Educational Sciences Association, 1973.

MAN'S CULTURE DETERMINES HIS MEANINGS OF SYMBOLS.

PERCEPTIONS ARE INFLUENCED BY CULTURE.

SOCIAL RELATIONSHIPS ARE SIGNIFICANT IN THE DEVELOPMENT OF AN INDIVIDUAL"S PERCEPTION.

MAN GETS MEANING FROM SYMBOLS NOT AS A TOTALLY UNIQUE PERSON, BUT AS AN INDIVIDUAL CAST IN A SOCIAL ROLE.

These groups which exert the most influence on an individual can determine, in great part, that individual's perceptions of life.

> It is the objective of this module to allow each individual to discover to his satisfaction the relationship of his cultural determinants to his process of searching for meaning.

Family, Associates, and the person's Individuality are the main cultural influences at work on the individual throughout his life.

Family (F)

The group of persons an individual considers to be his family. In early childhood the family influence tends to be strong.

The individual with a major Family (F) orientation tends to interpret symbols and their meanings from a family point of view. That group viewed as family for him will influence his interpretations and meanings.

Individual (I)

I characteristics manifest themselves in the willingness of the person to bring his own influence or definition to his symbolic interpretation.

Persons with major Individual (I) determinants are aware of the traits that distinguish him from others and his acceptance or treatment of those differences

Persons with major (I) like to express ideas & thoughts in their own words.

This person can work alone in independent learning situations.

Associate (A)

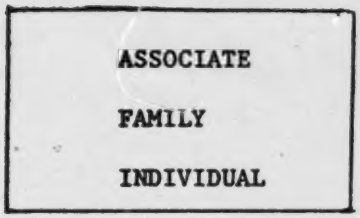
Characteristics manifest themselves in persons whose peer group influences to a large degree the meanings of both theoretical and qualitative symbols.

----- THE ASSOCIATE PERSON PREFERS TO WORK WITH OTHERS.

----- ASSOCIATE PEOPLE ARE CONCERNED WITH WHAT OTHER PEOPLE THINK AND DO.

People sometimes learn very quickly from others. When this happens, the Associate determinant is at work.

A person with major Associate (A) influence prefers learning environments with his peers or his group.




These are the determinants that seem to be almost always present in the individual's search for meaning.

THE RELATIVE STRENGTH OF EACH DETERMINANT TENDS TO VARY SOME WITH THE AGE OF THE PERSON AND THE SYMBOLIC CONDITION.

The individual's cultural determinants ought to be a fundamental consideration in any effort to educate.

—— Is your strongest cultural influence your Associates?

—— Or is your Family influence stronger

—— Perhaps your Individuality is stronger?

WHICH ARE YOU?

Rank these three determinants in order that they influence you.

ARE YOU ----------

ASSOCIATE

FAMILY

INDIVIDUAL

_____

Rank these cultural determinants as you access yourself.

# APPENDIX III

## MODALITIES OF INFERENCE

MODALITIES OF INFERENCE

Individuals get meaning from symbols. Each individual's culture influences the meanings he gets from symbols. And modes of inference also influence meaning.[1]

** A MODE IS A PATTERN, AND AN INFERENCE IS REASONING **

The individual who is receiving meaning through sounds, words, numbers, pictures or any form engages in a series of processes that include sorting, testing, and validating before internalizing messages or conclusions. This process is called modality of inference.

Upon completion of this module, the individual will be able to recognize and understand to his satisfaction his own pattern of reasoning.

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***** HOW DO YOU FIGURE THINGS OUT?

***** WHY DID YOU DO IT THAT WAY?

***** WHAT ARE YOUR REASONS FOR DOING THAT?

All these and many more questions like them are probes for the mode of inference used (manner of reasoning).

There are two processes that can be used to derive conclusions:

I. The inductive logical process yields a probability conclusion. This is the process most frequently used my man, and there are four ways of reaching a probability conclusion:

A. Magnitude

B. Difference

C. Relationship

D. Appraisal

A. MAGNITUDE (M)

Magnitude patterns compare to fixed standards and categories.

The magnitude person appeals to rules, regulations and traditions.

Rules, standards, and codes people live by are evidence of (M).

Individuals who sort things into neat classes and categories are exhibiting (M).

- Learning tasks requiring specific outlines, definite sequentially arranged problems, extremely well organized highly structured situations are examples of Magnitude. Students with such patterns do well in these conditions.

B. DIFFERENCE (D)

The person with this reasoning pattern tends to look at comparisons or contrasts.

The (D) person is alert to qualities or measurements. He quickly sees differences in the shape, color or size of objects.

(D) persons listen to a statement and generate an opposite point of view and will preface their remarks with "Yes, but . . ."

These individuals grasp ideas better if they can see how an idea differs from another idea.

These persons frequently offer "another point of view."

(D) persons are frequently characterized by an "argumentative posture." His kinesics may say "I am different."

C. Relationship (R)

The (R) person likes a variety of examples to illustrate a point out of which he will synthesize the idea being presented.

(R) personalities are interested in seeing how various parts and/or pieces of a problem fit together: For example, taking a toy apart to see the relationship or working a puzzle.

Relationship (R) individuals look for reasons for behavior: "Why do you suppose he did that?"

(R) persons look for interconnection of ideas in order to make for relevance. There must be a perceived relationship between parts before the idea is relevant to this person.

Relationship individuals make associations with things they see and hear with similar items perceived in the past and make a connection.

-- continued

This person considers a number of alternatives before deciding on a solution to a problem.

> "Tom is a hard worker; he participates in class; he speaks well; he is a leader; that's why he gets good grades and scholarship awards."

This is an example of a teacher using relationship inference.

D. Appraisal (L)

. . .

> Is the reasoning pattern used by a person who employs all three modalities: Magnitude, Difference, and Relationship giving equal weight to each in his reasoning process. [2]

An (L) person might find himself unable to make a quick decision.

An appraisal personality possibly may think too much: analyzing, comparing, contrasting before reaching a conclusion

An extreme example may be procrastination.

The (L) student frequently wants more information or another way to look at a problem before deciding.

The appraisal person sees all these varieties of information as necessary.

(L) persons feel uncomfortable when the choices are limited as in an either/or situation.

Appraisal persons in their speech may wander through a variety of explanations without arriving at a point.

II. The second logical process is the Deductive (K) process. The deductive process produces a conclusion which is a logically necessary consequence from that particular chain of reasoning.

In math the addition of two plus two logically and necessarily results in four.

***** The deductive process is shown as (K) on the map.

***** A deductive process is necessary in such educational tasks as geometry.

It is generally accepted that the deductive reasoning process is used infrequently in daily living.

THE (K) PERSON LOOKS FOR PREDICTABILITY. THIS PERSON MAY ENJOY MATH BECAUSE THE ANSWER TO A PROBLEM IS AN EXACT QUANTITY.

DEDUCTIVE PERSONALITIES MAY ARGUE BY CLAMING TO HAVE "LOGIC" OR TRUTH ON THEIR SIDE.

***** This person requires rules and definitions that assure the correct solution.

***** The (K) person prefers puzzles where following the rules will assure the solution.

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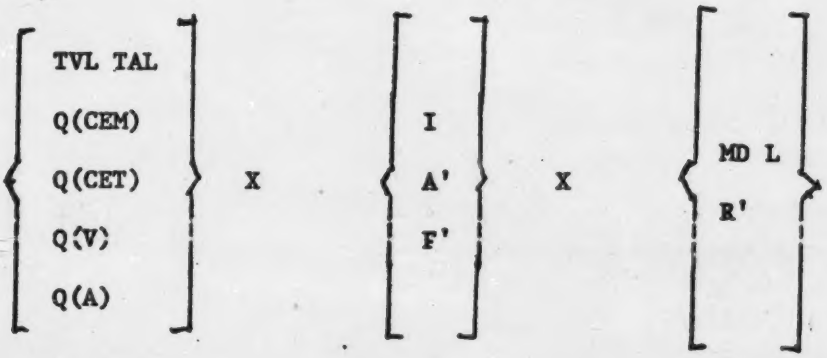
SUMMARY

Some Guides to Follow:

1. The three sets - symbols and their meanings, cultural determinants, and modalities of inference - must always be considered together since they are functions of each other.




2. Each set relates to the other sets by modifying or qualifying. Only by viewing all three can one accurately appraise an individual's cognitive style.

3. All elements within a set should be considered together to determine their relationships. Do not isolate a single element as an isolated strength or weakness.

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4. A Cognitive Style map is not an end in itself. It is similar to a good doctor's diagnosis; it indicates what is well and perhaps some things that are not well.

5. A teacher or a student should view his majors as shown on the map as "strengths" - those ways the person currently derives meaning from his environment. These may be considered as "open channels" that can be utilized to enable learning.

6. A diagnosis will also point to areas of minor or negligible strength. This sets the stage for learning experiences to "augment" such weaknesses.

7. The "ideal" map would show a person with major in all elements. This would indicate an ability to derive meaning in all possible ways with the widest possible cultural determination and a complete range of inferential patterns.

8. The Cognitive Style map can be derived in several ways: observation, testing, conversation, examination of the person's work. The map need not be derived from a single diagnostic session and probably cannot be.

Using current strengths as resources is one of the major diagnostic pruposes of the Cognitive Map.

***** A MAP IS CHANGEABLE - NOT STATIC. *****

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WHAT IS YOUR MODALITY OF INFERENCE (Manner of reasoning)?

In your opinion, are you ----------

| | |
|---|---|
| MAGNITUDE | (M) |
| RELATIONSHIP | (R) |
| DIFFERENCE | (D) |
| APPRAISAL | (L) |
| DEDUCTIVE | (K) |

List in order of importance to you.

## REFERENCES

1. Radike, Floyd, W. Handbook for Teacher Improvement Utilizing the Educational Sciences. American Educational Sciences Association, 1973.

2. Hill, Joseph E. The Educational Sciences. Oakland Community College Press, 1972.

APPENDIX IV

CLASS PLAN

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PREFERRED LEARNING STYLE

PLS 9000

------- An experience with the concept of Educational Sciences with a focus on the science of Cognitive Style (preferred learning style).

------- Scheduled to meet MWF, 2:00 - 2:50 p.m. March 4 - March 22, 1974 for a total of 9 hours.

Open to both students and faculty.

Schedule is as follows:

Hour 1 - Registration detail, general introduction to the concept of Educational Sciences, introduction to Cognitive Style.

****Hour 2 - Test for Cognitive Style Map Interest Inventory

Hours 3-5 Experience with the vocabulary and concepts and rationale of a Cognitive Map.

Hours 6-9 Interpretations of Individual (your own) Cognitive Maps. Suggestions for utilizing maps in learning process.

Tom Griffin
March 1974

# APPENDIX V

## SAMPLES OF STATEMENTS ON TEST

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Test One (continued)

17. I find it necessary to write down a telephone number as soon as I hear it in order to remember it.
4F

18. I communicate with friends and colleagues by telephone rather than by writing messages to them.
1D

19. I prefer to read a newspaper myself rather than have someone read it aloud to me.
3F

20. I prefer to follow verbal directions rather than written directions.
1E

21. I prefer to read directions rather than have someone interpret them to me.
3G

22. Verbal mathematics tests are easier for me than written mathematics tests.
2C

23. When I go shopping, I read the price of each item and keep a running total in my head.
4G

24. I quote statistical data to others in order to prove my point in an argument.
2B

25. I find it comfortable to add spoken or dictated numbers mentally.
2A

26. I understand more easily when I read information rather than when I hear it.
3H

27. I achieve best on written mathematics tests.
4B

28. After I dictate a letter, I read it to be certain it is correct.
3A

29. It is easy for me to remember the numbers and formulas I have heard during a conversation.
2E

30. I keep accurate written records in my check book.
4C

31. If I were buying a car, I would discuss the engine specifications with the salesman or a friend.
2H

32. I solve mathematical problems more rapidly if they are written.
4A

# APPENDIX VI

## SAMPLES OF COGNITIVE MAPS

OAKLAND COMMUNITY COLLEGE

COGNITIVE STYLE LISTING PIEDMONT DATE 03/12/74



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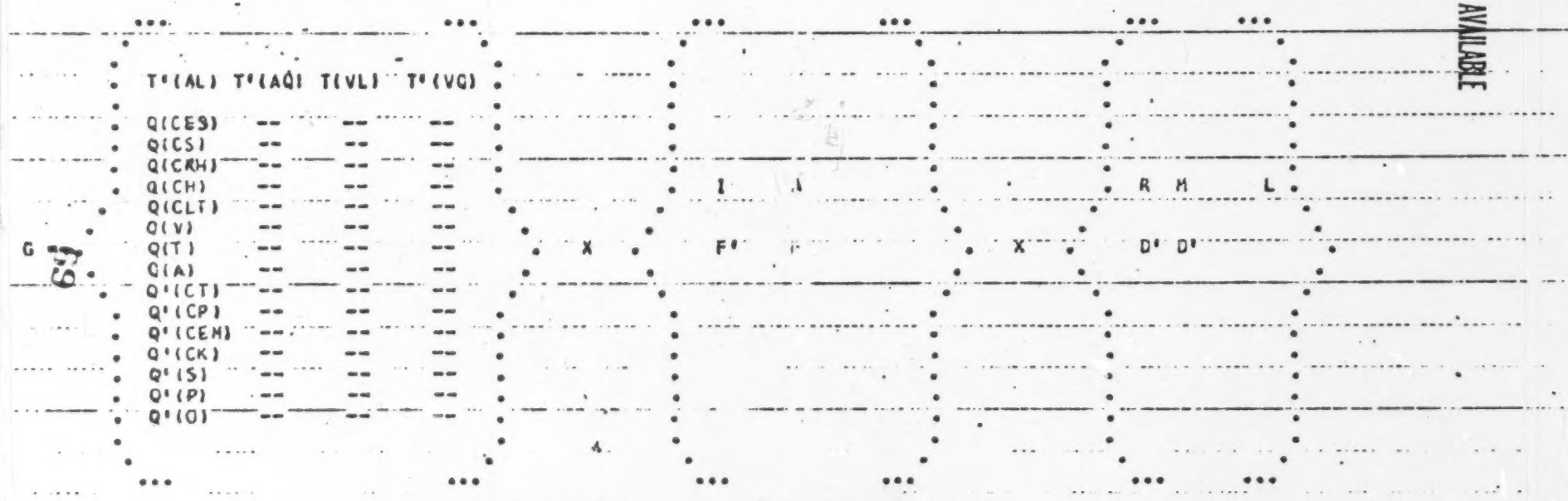


TEST SCORES (DATE PROCESSED 03/11/74)

| TEST NO | ELEMENT | PERCENTILE | TEST NO | ELEMENT | PERCENTILE | ELEMENT | PERCENTILE | ELEMENT | PERCENTILE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | T(VL) | 70-79 | 7,8 | Q(CEM) | 40-49 | Q(CES) | 70-79 | Q(CET) | 50-59 |
| 2 | T(AL) | 30-39 | | Q(CH) | 80-89 | Q(CK) | 40-49 | Q(CKH) | 60-69 |
| 3 | T(VQ) | 40-49 | | Q(CL) | 40-49 | Q(CS) | 80-89 | Q(CT) | 40-49 |
| 4 | T(VL) | 0-0 | 9 | I | 70-79 | A | 80-89 | F | 40-49 |
| 5 | T(AQ) | 40-49 | 10 | M | 50-59 | O | 40-49 | R | 70-79 |
| 6 | T(VL) | 0-0 | | L | 70-79 | | | | |

SINGLE K TEST (K) NOT INDICATED

OAKLAND COMMUNITY COLLEGE

COGNITIVE STYLE LISTING PLACEMENT DATE 03/12/74



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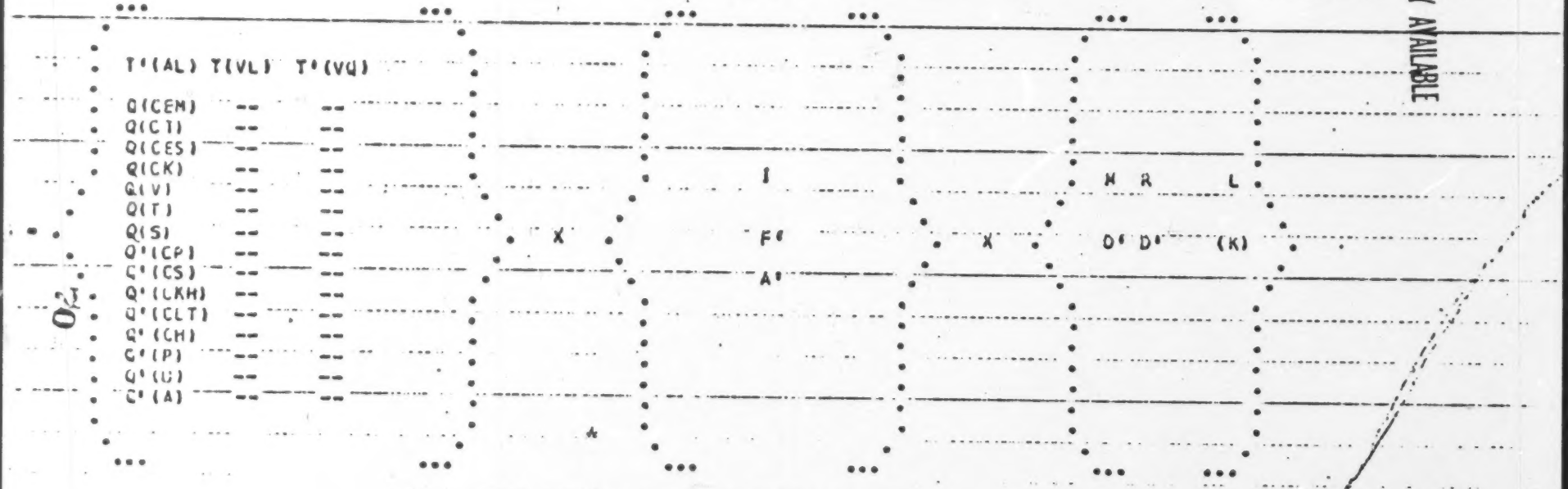


TEST SCORES (DATE PROCESSED 03/11/74)

| TEST NO | ELEMENT | PERCENTILE | TEST NO | ELEMENT | PERCENTILE | ELEMENT | PERCENTILE | ELEMENT | PERCENTILE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | T(VL) | 70-79 | 7,8 | Q(CEM) | 60-69 | Q(CES) | 50-59 | Q(CT) | 40-49 |
| 2 | T(AL) | 40-49 | | Q(CH) | 30-39 | Q(CK) | 50-59 | Q(CKH) | 40-49 |
| 3 | T(VQ) | 30-39 | | Q(CP) | 40-49 | Q(CS) | 40-49 | C(CT) | 50-59 |
| 4 | T(VL) | 0-0 | 9 | I | 70-79 | A | 30-39 | F | 40-49 |
| 5 | T(AQ) | 10-19 | 10 | M | 60-69 | D | 30-39 | R | 60-69 |
| 6 | T(VL) | 0-0 | | L | 70-79 | | | | |

CIRCLE K TEST (K) INDICATED

OAKLAND COMMUNITY COLLEGE

COGNITIVE STYLE LISTING PIEDMONT DATE 03/12/74

PAGE 4

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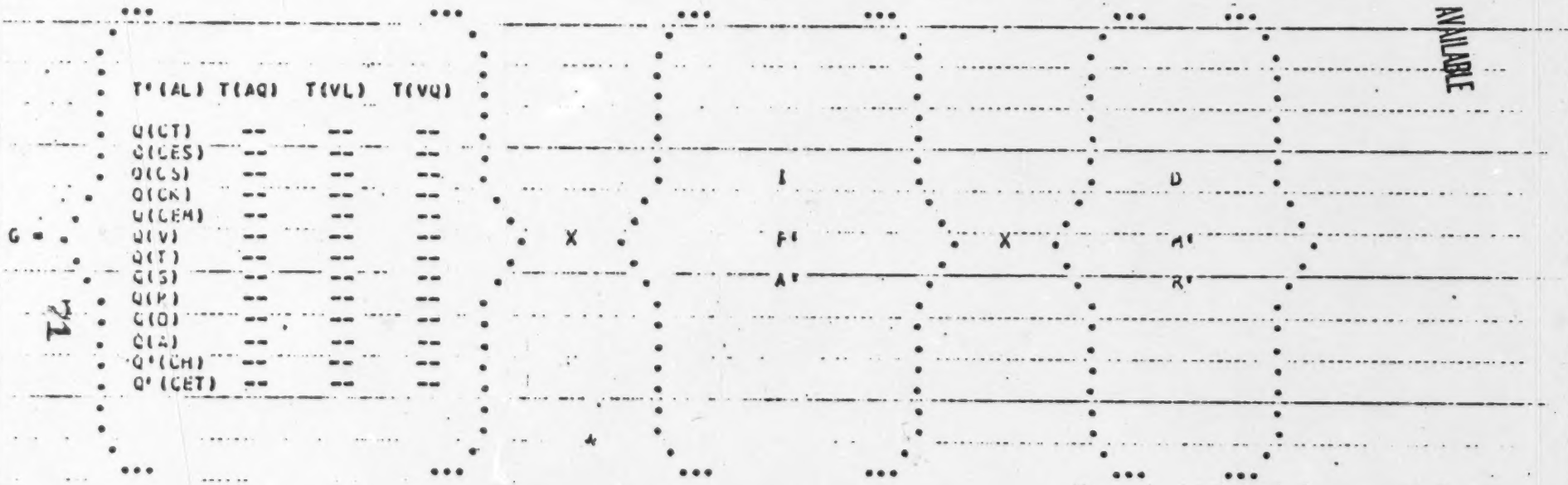
| | T'(AL) | T(AQ) | T(VL) | T(VQ) |
|---|---|---|---|---|
| Q(CT) | -- | -- | -- | |
| Q(CES) | -- | -- | -- | |
| Q(CS) | -- | -- | -- | |
| Q(CK) | -- | -- | -- | |
| Q(CEM) | -- | -- | -- | |
| Q(V) | -- | -- | -- | |
| Q(T) | -- | -- | -- | |
| Q(S) | -- | -- | -- | |
| Q(P) | -- | -- | -- | |
| Q(O) | -- | -- | -- | |
| Q(A) | -- | -- | -- | |
| Q'(CH) | -- | -- | -- | |
| Q'(CET) | -- | -- | -- | |




TEST SCORES (DATE PROCESSED 03/11/74)

| TEST NO | ELEMENT | PERCENTILE | TEST NO | ELEMENT | PERCENTILE | ELEMENT | PERCENTILE | ELEMENT | PERCENTILE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | T(VL) | 60-69 | 7,8 | Q(CEM) | 60-69 | Q(CES) | 80-89 | Q(CET) | 30-39 |
| 2 | T(AL) | 40-49 | | Q(CH) | 40-49 | Q(CK) | 60-69 | Q(CKH) | 20-25 |
| 3 | T(VQ) | 60-69 | | Q(CP) | 10-19 | Q(CS) | 70-79 | Q(CT) | 80-89 |
| 4 | T(VL) | 0-0 | 9 | I | 40-49 | A | 30-39 | F | 30-39 |
| 5 | T(AQ) | 60-69 | 10 | M | 30-39 | D | 40-49 | R | 30-39 |
| 6 | T(VL) | 0-0 | | L | 26-29 | | | | |

CIRCLE K TEST (K) NOT INDICATED

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# APPENDIX VII

## QUESTIONAIRE

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1. What impact has "Preferred Learning" had on you?

2. Would you recommend that a similar version of this course be offered again for faculty and students?

3. Do you think CPCC ought to offer more short non-academic courses?

4. Assuming that each of us do have a preferred learning style (from your personal experience) what things do you like to have present in your learning environments?

5. Do you think that a course about learning and how we learn would have a high appeal to all people?

6. Do you feel that the concept of Educational Sciences will influence the design of future curricula? How?

UNIVERSITY OF CALIF.
LOS ANGELES

APR 11 1975

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